

Case 3684

***Elasmostethus dorsalis* Jakovlev, 1876 (currently *Elasmucha dorsalis*; Insecta, Heteroptera): proposed precedence over *Acanthosoma vicinum* Uhler, 1861 (currently *Elasmucha vicina*)**

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Abstract. The purpose of this application, under Article 23.9.3 of the Code, is to conserve the widely used specific name *Elasmucha dorsalis* (Jakovlev, 1876) for a species of subsocial acanthosomatid bug from East Asia. The name is threatened by the senior subjective synonym *Elasmucha vicina* (Uhler, 1861), which has seldom been used since its first publication. Therefore, precedence of the name *Elasmucha dorsalis* (Jakovlev, 1876) is proposed.

Keywords. Nomenclature; taxonomy; Heteroptera; ACANTHOSOMATIDAE; *Elasmucha*; *Elasmucha dorsalis*; *Elasmucha vicina*; East Asia.

1. Uhler (1861, p. 286) described a new species, *Acanthosoma vicinum* (Insecta, Heteroptera, ACANTHOSOMATIDAE) from Hong Kong.

2. Jakovlev (1876, p. 106) described a new species, *Elasmotethus dorsalis* from the Russian Far East. This species was transferred to *Elasmucha* by Reuter (1891, pp. 172, 177).

3. *Acanthosoma vicinum* was greatly ignored by subsequent authors: it was not cited except in taxonomic catalogues and lists (Stål, 1876, p. 115; Lethierry & Severin, 1893, p. 260; Kirkaldy, 1909, p. 181; Hoffmann, 1932, p. 10, 1935, p. 105), and it was explicitly regarded as of unknown or doubtful identity in all of these works as well as by Hsiao & Liu (1977, p. 175). Wu (1933, p. 217) cited the epithet in combination with the generic name *Cyphostethus* Fieber, 1860 without providing any explanation. The single exception is the contribution by Kumar (1974, pp. 47, 50), who reexamined a single male syntype, designated it as the lectotype, provided highly inaccurate drawings of the pronotum and the metapleuron, and established a new monotypic genus, *Grossaria* Kumar, 1974, for it. Tsai & Rédei (2015, p. 376) showed that the illustrations and the description provided by Kumar (1974) were incorrect; as a consequence no subsequent authors were able to recognize this species, and the genus and the species have never been cited except in the taxonomic catalogue by Göllner-Scheiding (2006, p. 178).

4. The identity of *Elasmucha dorsalis* was clarified by Kerzhner (1972, pp. 215, 218). There has been an unequivocal agreement about the identity of *E. dorsalis* among subsequent authors. This biological species is widely distributed in East Asia (Siberia and the Far East territory of Russia, Kazakhstan, Mongolia, North and South Korea, Japan, and several provinces of China) (Tsai & Rédei, 2015, pp. 379–380), and it has frequently been cited in the literature. The wide usage of the name was demonstrated by Tsai & Rédei (2015, p. 380) by a compilation of 115 references published in the immediately preceding 50 years. In addition to the numerous faunistic records the bibliography of the species includes papers providing redescriptions, photos or illustrations of diagnostic characters of the adults (Petrova, 1975, p. 108; Hsiao & Liu, 1977, p. 164; Vinokurov, 1979, p. 155; Zhou, 1985, p. 16; Kanyukova, 1988, p. 915; Nonnaizab, 1988, p. 225; Zhang & Sie, 1992, p. 250; Lin & Zhang, 1993, p. 134; Tomokuni, 1993, p. 238; Lin, 1995, p. 64; Vinokurov & Kanyukova, 1995, p. 195; Bu & Zheng, 1997, p. 209; Lin et al., 1999, p. 99; Yamamoto & Hayashi, 2012, p. 514) and the immatures (Lin, 1995, p. 64; Kobayashi & Tachikawa, 2004, p. 301), host plant records and other information on various aspects of its bionomics (Josifov & Kerzhner, 1978, p. 165; Kerzhner, 1978, p. 53; Zheng & Gao, 1990, p. 18; Lin & Zhang, 1993, p. 134; Tomokuni, 1993, p. 238; Chen et al., 1995, p. 207; Lin, 1995, p. 64; Lin et al., 1999, p. 99; Kobayashi & Tachikawa, 2004, p. 301; Yamamoto et al., 2009, p. 35), agricultural importance (Lin, 1995, p. 64) and even physiology (Hori, 1972, p. 502). Particularly the remarkable reproductive behaviour of the species was a subject of a detailed study (Kudo et al. 1989; Kudo 1990a–c, 2000, 2001); this information has been cited in comprehensive handbooks on general insect ecology and behaviour (Costa 2006, p. 284, Trumbo, 2012, p. 83). This species was selected to represent the ACANTHOSOMATIDAE in a cladistic analysis of pentatomoidean families (Xu, 1993). It was also included in a molecular study on the phylogenetic relationships of various acanthosomatids and the coevolution with their gut symbiotic bacteria (Kikuchi et al., 2009); its mitochondrial gene of cytochrome oxidase subunit I (mtDNA-COI) is available from GenBank (AB368845.1). The species name has been cited in comprehensive reference books on Heteroptera (Schuh & Slater 1995, p. 217), handbooks on agricultural and forestry entomology (Wu, 1984, p. 38; Lin, 1995, p. 64; Hori, 2000, p. 16) and popular insect books and field guides targeting a wide public (Kawasawa & Kawamura, 1975, p. 238; Tomokuni,

1993, p. 238; Kwon & Huh, 1998, p. 73; Kinota, 2006, p. 390; Yamamoto & Hayashi, 2012, p. 514).

5. Based on the re-examination of the lectotype of *Acanthosoma vicinum* Tsai & Rédei (2015, pp. 375, 379) transferred it to *Elasmucha* and concluded that it is a senior subjective synonym of *Elasmucha dorsalis*.

6. After its original description, *E. vicinum* was not correctly recognized by subsequent authors until Tsai & Rédei (2015). On the other hand, there is extensive and substantial literature on this biological species under the junior name *E. dorsalis*. It is a widely distributed and frequent species in East Asia. Its specialized reproductive behaviour has been a subject of detailed study therefore it is treated in handbooks and textbooks of insect ecology and behaviour. It appears in the agricultural and ecological literature and even in popular books on insects, i.e. references primarily targeting non-taxonomists. In all of these works it is invariably referred to under the junior name *E. dorsalis*. A discussion among heteropterists prior to preparation of the present application suggested that the opinion of the overwhelming majority of the community is that changing the name in prevailing usage simply because of adherence to the Principle of Priority is undesirable and would threaten stability (cf. Article 23.2 of the Code). The number and authorship of the works using the junior name meet the conditions of Article 23.9.1.2., but the senior name was used as a valid name after 1899 therefore the 'automatic' conservation of *E. dorsalis* under Article 23.9.2 is not possible. Therefore, the case is brought to the Commission under the provisions of Article 23.9.3.

7. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to give the specific name *dorsalis* Jakovlev, 1876, as published in the binomen *Elasmostethus dorsalis*, precedence over the specific name *vicinum* Uhler, 1861, as published in the binomen *Acanthosoma vicinum*, whenever the two are considered to be synonyms;
- (2) to place on the Official List of Specific Names in Zoology the following names:
 - (a) *dorsalis* Jakovlev, 1876, as published in the binomen *Elasmostethus dorsalis*, with the endorsement that it is to be given precedence over the name *Acanthosoma vicinum* Uhler, 1861 whenever the two are considered to be synonyms;
 - (b) *vicinum* Uhler, 1861, as published in the binomen *Acanthosoma vicinum*, with the endorsement that it is not to be given priority over the name *Elasmostethus dorsalis* Jakovlev, 1876 whenever the two are considered to be synonyms.

References

- Bu, W.J. & Zheng, L.Y. 1997. Hemiptera: Tessaratomidae, Dinidoridae, Scutelleridae, Pentatomidae and Acanthosomatidae. Pp. 187–211 in Yang, X.K. (Ed.), *Insects of the Three Gorge Reservoir area of Yangtze River*, vol. 1. xx, 974 pp., 8 pls. Chongqing Publishing House, Chongqing.
- Chen, H.L., Xu, Z.W., Tang, Y.Y. & Jin, G.M. 1995. A list of Hemiptera and their hosts from the forest regions in Lishui Prefecture, Zhejiang Province, China. *Acta Agriculturae Universitatis Jiangxiensis*: 17(2): 204–214.
- Costa, J.T. 2006. *The other insect societies*. xiv, 767 pp. Belknap / Harvard University Press, Cambridge, MA.

- Göllner-Scheiding, U.** 2006. Family Acanthosomatidae Signoret, 1864. Pp. 166–181 in Aukema, B. & Rieger, Ch. (Eds.), *Catalogue of the Heteroptera of the Palaearctic Region, vol. 5. Pentatomomorpha II*. xiii, 550 pp. The Netherlands Entomological Society, Amsterdam.
- Hoffmann, W.E.** 1932. A list of the Pentatomidae, Plataspidae, and Coreidae (order Hemiptera) of China, Korea, and Indo-China. *Journal of the Pan-Pacific Research Institution*, 7(1): 6–11.
- Hoffmann, W.E.** 1935. An abridged catalogue of certain Scutelleroidea (Plataspidae, Scutelleridae, and Pentatomidae) of China, Chosen, Indo-China, and Taiwan. *Lignan University Science Bulletin*, 7: 1–294.
- Hori, K.** 1972. Comparative study of a property of salivary amylase among various heteropterous insects. *Comparative Biochemistry and Physiology*, 42B: 501–508.
- Hori, K.** 2000. Possible causes of disease symptoms resulting from the feeding of phytophagous Heteroptera. Pp. 11–35 in Schaefer, C.W. & Panizzi, A.R. (Eds.), *Heteroptera of economic importance*. 828 pp. CRC Press, Boca Raton.
- Hsiao, T.Y. & Liu, S.L.** 1977. Family Acanthosomatidae. Pp. 159–180, 300–302, plates 25–29 in Hsiao, T.Y., Ren, S.Z., Zheng, L.Y., Jing, H.L. & Liu, S.L. *A handbook for the determination of the Chinese Hemiptera-Heteroptera, vol. I*. iii, 330 pp., 52 pls. Science Press, Beijing.
- Jakovlev, V.E.** 1876. New bugs, Hemiptera Heteroptera, of the Russian fauna. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 50–51(3): 85–124.
- Josifov, M.V. & Kerzhner, I.M.** 1978. Heteroptera aus Korea. II. Teil (Aradidae, Berytidae, Lygaeidae, Pyrrhocoridae, Rhopalidae, Alydidae, Coreidae, Urostylidae, Acanthosomatidae, Scutelleridae, Pentatomidae, Cydnidae, Plataspidae). *Fragmenta Faunistica*, 23(9): 137–196.
- Kanyukova, E.V.** 1988. [Family Acanthosomatidae]. Pp. 912–915 in Lehr, P.A. (Ed.), *Opredelitel' nasekomékh Dal'nego Vostoka SSSR, Tom 2. Ravnokrylye i poluzhestokrylye [Keys to the identification of insects of the Soviet Far East. Vol. 2, Homoptera and Heteroptera]*. 972 pp. Nauka, Leningrad.
- Kawasawa, T. & Kawamura, M.** 1975 [One hundred species of true bugs.] 301 pp. Zenkoku-noson-kyoiku-kyokai, Tokyo.
- Kerzhner, I.M.** 1972. Shieldbugs of the genus *Elasmucha* Stål (Heteroptera, Acanthosomatidae) of the fauna of the USSR. *Zoologicheskii Zhurnal*, 52(2): 214–219.
- Kerzhner, I.M.** 1978. Heteroptera of Sakhalin and Kuril Islands. Pp. 31–57 in Krivolutsкая, G.O. (Ed.), *Novye dannye o nasekomykh Sakhalina i Kuril'skikh ostrovov [New data on the insects of Sakhalin and the Kuril Islands.] Trudy Biologo-Pochvennogo Instituta (N.S.)*, 50(153): 1–168.
- Kikuchi, Y., Hosokawa, T., Nikoh, N., Meng, X.Y., Kamagata, Y. & Fukatsu, T.** 2009. Host-symbiont co-speciation and reductive genome evolution in gut symbiotic bacteria of acanthosomatid stinkbugs. *BMC Biology* 2009, 7(2): 1–22. doi:10.1186/1741-7007-7-2
- Kinota, K.** 2006. *Common insects of Sapporo*. 413 pp. Hokkaido University Press, Hokkaido.
- Kirkaldy, G.W.** 1909. *Catalogue of the Hemiptera (Heteroptera) with biological and anatomical references, lists of foodplants and parasites, etc. Vol. I. Cimicidae*. xl, 392 pp. F.L. Dames, Berlin.
- Kobayashi, T. & Tachikawa, S.** 2004. [An illustrated book of eggs and larvae of Heteroptera. *Morphology and ecology*.] 7, 323 pp. Yokendo, Tokyo.
- Kudo, S.** 1990a. Brooding behavior in *Elasmucha putoni* (Heteroptera: Acanthosomatidae), and a possible nymphal alarm substance triggering guarding responses. *Applied Entomology and Zoology*, 25(4): 431–437.
- Kudo, S.** 1990b. [Maternal care in *Elasmucha* spp. (1).] *Insectarium*, 27: 156–163.
- Kudo, S.** 1990c. [Maternal care in *Elasmucha* spp. (2).] *Insectarium*, 27: 188–195.
- Kudo, S.** 2000. The guarding posture of females in the subsocial bug *Elasmucha dorsalis* (Heteroptera: Acanthosomatidae). *European Journal of Entomology*, 97(1): 137–139.
- Kudo, S.** 2001. Intraclutch egg-size variation in acanthosomatid bugs: adaptive allocation of maternal investment? *Oikos*, 92(2): 208–214.

- Kudo, S., Sato, M. & Ohara, M.** 1989. Prolonged maternal care in *Elasmucha dorsalis* (Heteroptera: Acanthosomatidae). *Journal of Ethology*, **7**(2): 75–81.
- Kumar, R.** 1974. A revision of world Acanthosomatidae (Heteroptera: Pentatomoidea): Keys to and descriptions of subfamilies, tribes and genera, with designation of types. *Australian Journal of Zoology, Supplementary Series*, **34**: 1–60.
- Kwon, Y.J. & Huh, E.Y.** 1998. *Insects' Life in Korea*, vol. 2. Hemiptera and Homoptera. 224 pp. Entomological Institute of Korea University, Seoul.
- Lethierry, L. & Severin, G.** 1893. *Catalogue général des Hémiptères. Tome I. Hétéroptères, Pentatomidae*. x, 286 pp. F. Hayez, Bruxelles,.
- Lin, Y.J.** 1995. *Elasmucha dorsalis*. Pp. 64–65 in Zhang, S.M. (Ed.), Hemiptera (2). *Economic insect fauna of China*, vol. 50. xiii, 169 pp, 24 pls. Science Press, Beijing.
- Lin, Y.J. & Zhang, S.M.** 1993. Hemiptera: Pentatomoidea. Pp. 106–139 in Huang, C.M. (Ed.), *The series of the bioresources expedition to the Longqi Mountain Nature Reserve: Animals of Longqi Mountain*. 2, 2, 3, 6, 8, 1130 pp. China Forestry Publishing House, Beijing.
- Lin, Y.J., Zhang, S.M. & Lin, Z.** 1999. Acanthosomatidae. Pp. 95–104 in Huang, B.K. (Ed.), *Fauna of insects, Fujian Province of China*, vol. 2. 2, 2, 3, 806 pp. Fujian Science & Technology Publishing House, Fuzhou.
- Nonnaizab.** 1988. *Fauna of Inner Mongolia (Hemiptera: Heteroptera). Vol I. Book 1*. 2, 2, 469 pp. Inner Mongolia People's Publishing House, Hohhot.
- Petrova, V.P.** 1975. *Shchitniki Zapadnoi Sibiri (Heteroptera, Pentatomoidea) [Shield-bugs of West Siberia (Hemiptera, Pentatomoidea)]*. 237 pp. Novosibirskiy Gosudarstvenniy Pedagogicheskiy Institut, Novosibirsk.
- Reuter, O.M.** 1891. Hemiptera Heteroptera från trakterna kring Sajanska bärgskedjan, insamlade af K. Ehnberg och R. Hammarström. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **33**: 166–208.
- Schuh, R.T. & Slater, J.A.** 1995. *True bugs of the world (Hemiptera: Heteroptera). Classification and natural history*. xii, 336 pp. Cornell University Press, Ithaca & London.
- Stål, C.** 1876. Enumeratio Hemipterorum. Bidrag till en förteckning öfver alla hittills kända Hemiptera, jemte systematiska meddelanden. 5. *Kongliga Svenska Vetenskaps-Akademiens Handlingar*, **14**(4): 1–162.
- Tomokuni, M.** (Ed.). 1993. *A field guide to Japanese bugs. Terrestrial heteropterans*. 380 pp. Zenkoku Noson Kyoiku Kyokai, Tokyo.
- Trumbo, S.T.** 2012. Patterns of parental care in invertebrates. Pp. 81–100 in Royle, N.J., Smiseth, P.T. & Kölliker, M. (Eds.), *The evolution of parental care*. xx, 356 pp. Oxford University Press, Oxford.
- Tsai, J.F. & Rédei, D.** 2015. The identity of *Acanthosoma vicinum*, with proposal of a new genus and species level synonymy (Hemiptera: Heteroptera: Acanthosomatidae). *Zootaxa*, **3936**(3): 375–386.
- Uhler, P.R.** 1861. Rectification of the paper upon the Hemiptera of the North Pacific Expedition. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **13**: 286–287.
- Vinokurov, N.N.** 1979. Nasekomye poluzhestkokrylye (Heteroptera) Yakutii [True bugs (Heteroptera) of Yakutia.] in: *Opredelitely po faune SSSR*, vol. 123. 232 pp. Akademiya Nauk SSSR, Leningrad.
- Vinokurov, N.N. & Kanyukova, E.V.** 1995. *Nasekomye poluzhestkokrylye (Heteroptera) Sibiri [True bugs (Heteroptera) of Siberia]*. 237 pp. Nauka, Novosibirsk.
- Wu, C.F.** 1933. A preliminary list of Hemiptera heretofore recorded from Kwangtung Province, South China. *Lingnan Science Journal (Suppl.)*, **12**: 203–231.
- Wu, L.** (Ed.). 1984. *A list of agricultural and forest insects of Guizhou*. 7, 271 pp. Guizhou People's Publishing House, Guiyang.
- Xu, Z.Q.** 1993. Phylogeny and cladistic analysis of the Pentatomoidea (Hemiptera: Heteroptera). *Acta Agriculture Universitatis Pekinensis*, **19**(2): 49–53.
- Yamamoto, A. & Hayashi, M.** 2012. Family Acanthosomatidae Signoret, 1864. Pp. 500–516, plates 122–128 in Ishikawa, T., Takai, M. & Yasunaga, T. (Eds.), *A field guide to Japanese bugs – Terrestrial heteropterans*, vol. 3. pp. 1–46, plates 1–128, pp. 177–573. Zenkoku Noson Kyoiku Kyokai Publishing Co., Tokyo.

- Yamamoto, A., Hayashi, M. & Kudo, S.** 2009. Host plants of Japanese acanthosomatid bugs (Heteroptera: Acanthosomatidae). *Japanese Journal of Entomology (N.S.)*, **12**(1), 31–38.
- Zhang, S.M. & Sie, R.F.** 1992. Acanthosomatidae. Pp. 249–251. *in*: Peng, J.W. & Liu, Y.Q. (Eds.), *Iconography of forest insects in Hunan China*. 4, 60, 1473 pp. Hunan Science and Technology Press, Changsha.
- Zheng, L.Y. & Gao, Z.N.** 1990. [List of heteropterous insects of Ningxia.] *Ningxia Journal of Agriculture and Forestry Science and Technology*, **1990**(3), 15–18.
- Zhou, X.H.** 1985. Hemiptera. Pp. 8–24, plates 5–6 *in* Wang, X.J. (Ed.), *Forest insect pictures of Hebei*. 3, 281 pp, 79 pls. Hebei Science & Technology Press, Shijia Zhuang.

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).